1. PHONEME INVENTORY. Mantjiltjara phonemes comprise seventeen consonants and six vowels.[2]

1.1 *Consonants.* There is a series of voiceless stops *p, t, ṭ, tj, k* and voiced nasals *m, n, ṇ, nj, ŋ* which match at five linear distinctions of bilabial, apico-alveolar, apico-domal, lamino-alveolar, and dorso-velar positions. A series of voiced laterals *l, ḷ, lj* match stops and nasals at the apico-alveolar, apico-domal, and lamino-alveolar positions. There is a voiced apico-alveolar flap or trill *ɾ*. Three voiced semiconsonants *w, ɾ, y* occur at bilabial, apico-domal, and lamino-palatal positions.

1.1.2 Consonant allophony. The stops have voiced allophones when following nasals:

kumpila	[kʊmbilɑ]	'hide!'
wanti	[wɑndi]	'woman'
tjaṇṭu	[tjɑɳɖʊ]	'dog'
wanjtja	[wɑnjdjɑ]	'where?'
waŋka	[wɒŋgɑ]	'talk'

The stops are in free variation with voiced allophones after consonants other than nasals:

malpa	[mɑlpɑ ~ mɑlbɑ]	'spear (type)'
wiltu	[wɪltʊ ~ wɪldʊ]	'hard'
yuḷṭu	[yʊḷʈʊ ~ yʊḷɖʊ]	'hollow'
waljtja	[wɑljtjɑ ~ wɑljdjɑ]	'self, real'
walka	[wɑlkɑ ~ wɑlgɑ]	'carving'
paɾka	[pɑɾkɑ ~ pɑɾgɑ]	'leaf, tea'
kaɾtjulj	[kɑɾtjʊlj ~ kɑɾdjʊlj]	'a boy's name'
kaɾpu	[kɑɾpʊ ~ kɑɾbʊ]	'noonday'

A voiced stop allophone alternates with a voiced fricative allophone in intervocalic position:

wiṗu	[wɪbu ~ wɪβu]	'tail'
ṛuka	[ɽuga ~ ɽuɣa]	'afternoon'
watjaṇu	[wadjaɳu ~ waðjaɳu]	'he said'

The apico-alveolar stop *ṭ* and the apico-domal stop *ṭ̣* have allophones analogous to those of the other stops except that they do not have fricative allophones:

mata	[mada]	'edible root (species)'
waṭa	[waɖa]	'tree (generic)'

In word-initial position before *a* and *a:* the lamino-alveolar stop *tj* alternates with an allophone with a palatal release [tjʸ]:

tjaṙṗa	[tjaɾba ~ tjʸaɾba]	'swim!'
tja:	[tja: ~ tjʸa:]	'mouth'

The lamino-alveolar stop *tj* is the only stop that occurs word final. In this environment the stop is unreleased:

tjuṙatj	[tjuɾaᵗʲ]	'leave it (emphatic)!'

The contrast between *ṭ, ṇ, l* and *ṭ̣, ṇ̣, ḷ* respectively is neutralized in utterance-initial position. The apico-domal series has been chosen to represent the archiphonemes[4] resulting from these fused ranges:

ṭ̣ikiḷ	[ᵗ/ʈɪgiḷ]	'dry'
ṇanpa	[ⁿ/ɳɑnpa]	'hair belt'
ḷu:ŋu	[ˡ/ḷu:ŋu]	'coagulated blood'

The degree of retroflexion of the apico-domal series fluctuates in utterance-medial position. Retroflexion is usually quite pronounced following *a* and *a:*, somewhat weaker following *u* and *u:*, and almost imperceptible at times after *i* and *i:*. However, a contrast with the apico-alveolar series is clearly attested in this position:

wala 'fast' : *waḷa* 'lake'
yini 'name' : *yiṇi* 'loose'
tjutu 'closed' : *tjuṭu* 'elder sister'

The lamino-alveolar nasal *nj* alternates with an allophone with a palatal release [njʸ] in word-initial position preceding *a* and *a:*:

njaṙu	[njaɾu ~ njʸaɾu]	'poor fellow!'
nja:ṭa	[nja:ɖa ~ njʸa:ɖa]	'when?'

Prepause a nonstressed rounded dorso-velar nasal [ŋ^{w}] and a nonstressed rounded apico-alveolar [l^{w}] are portmanteau phones[5] signaling the phoneme sequence *ŋu* and *lu* respectively:

puřuŋu	[puřuŋ^{w}]	'flower (generic)'
kayilimalu	[kayilimal^{w}]	'northern group'

Although all consonants have lip rounding before *u* and *u:* and all except *w* have lips spread before *i* and *i:*, the fusing of phoneme sequences other than *ŋu* and *lu* was not noted in the data.

The contrast between *n, l* and *nj, lj* respectively before *tj* is neutralized. In ordinary to rapid speech-tempos the norm is *nj, lj* preceding *tj*:

tjanjtji	[tjanjdji]	'egg'
waljtji	[waljtji]	'tree (species)'

In deliberate and slow speech-tempos, fluctuation between *n, l* and *nj, lj* respectively occurs rarely preceding *tj*:

ṇinjtjařpa	[ṇiɲjdjařpa ~ ṇiɲdjařpa]	'serious'
paljtjalpa	[paljtjalpa ~ paltjalpa]	'full'

Pressure from the distribution pattern of phonemes within the phonological word would suggest a contrast between apico-alveolars and lamino-alveolars before stops. However, the phonetic evidence does not support the contrast before lamino-alveolar stops.

The apico-alveolar *ř* is a flap in intervocalic position and a trill elsewhere. The trill fluctuates between voicing [r̃] and voicelessness [R̃] in word-final position. The flap may vary to a trill in emphasized speech.

mařa	[mařa]	'bring it!'
pařka	[pařga]	'leaf, tea'
tjukuř	[tjuguř ~ tjuguR̃]	'dream, story'
njařu	[njařu ~ njařu]	'poor fellow!'

In addition to the environments described above, fluctuation between voicing and voicelessness in the utterance-final syllable has been noted. Utterance-final syllables are usually devoiced and in rapid speech-tempos this devoicing can include the penultimate syllable as well:

puŋkuṇiya	[puŋguṇiYA]	'they are fighting'
tjupimala	[tjubiMAŁA]	'make it wet!'

As the phonetic illustration of the voiceless consonant allophones in this environment would have added to the multiplicity of phonetic examples, all data are presented in utterance-medial position unless otherwise stated.

1.2 *Vowels.* There are six vowel phonemes: high close front unrounded vocoids *i, i:*; low open central unrounded vocoids *a, a:*; and high open back rounded vocoids *u, u:*.

1.2.1 Vowel attestation. The short vowels:

yakiři	'headband'
yakaři	'be quiet!'
yakuři	'dance!'
puṛi	'shade'
puṛa	'fruit (species)'
kuṛu	'eye'

Vocalic length is phonemically distinctive.[6] Long vowels are here interpreted as single phonemes because of a structural pattern in which no vowel clusters occur. These vowels are represented phonemically by *i:, a:, u:*:

tji:	'that'
tja:	'mouth'
yu:	'yes'

Examples of contrast between short and long vowels:

yilta	'true'
yi:ljtjula	'count it!'
maři	'bring it!'
ma:řa	'somewhere'
muŋa	'night'
mu:ŋu	'a fly'

1.2.2 Vowel allophony. All vowel phonemes have voiceless allophones prepause except in certain intonation contours.[7]

All vowels have retroflexed allophones before apico-domal consonants:

miṭa	[mɨ̥ɖa]	'not'
waṭa	[wḁɖa]	'tree (generic)'
puṇu	[pʊ̥ɳʊ]	'bush country'
mi:ṇti	[mɨ̥:ɳɖi]	'charcoal'
ka:ṇka	[kḁ:ŋga]	'crow'
lu:ṇpa	[ˡ/lʊ̥:ɳba]	'mud lark'

All vowels have slightly nasalized allophones between nasals:

muŋa	[mʊ̃ŋa]	'night'
ṇanpa	[ⁿ/ṇɑ̃nba]	'hair belt'
ŋaṇta	[ŋɑ̃ṇda]	'sick'
ṇjuma	[ṇj̊ʊ̃ma]	'flour'
minjminj	[mɪ̃nj̊mɪ̣nj]	'red'

In rapid speech-tempos the phoneme *u* fluctuates to *i* before *y* at morpheme boundaries:

kalatju yanu	[kalɑdji yɑnʊ]	'and we (pl. excl.) went'
tjunuyanu	[tjʊniyɑnʊ]	'he left him'

The vowel *i* has a high open allophone [ɪ] which fluctuates freely with a high close allophone [i]. The allophone [ɪ] tends to occur in stressed syllables whereas [i] most often occurs in word-final position:

mitu	[mɪdʊ ~ midʊ]	'dead'
mitji	[mɪdji ~ midji]	'blood'

The vowel *a* has the allophones [e], [æ], [a], [ɑ], [ʌ], [ɒ], [ɑᶦ], and [ɑᵘ]. All allophones may fluctuate with the low central allophone [ɑ]. Both [æ] and [e] fluctuate with [ɑ] following *y*:

yalji	[yɑlji ~ yælji]	'stone'
yiyala	[yɪyɑlɑ ~ yɪyelɑ]	'set it free!'

An allophone [a] sometimes occurs following lamino-alveolar consonants:

tjakatjaka	[tjɑkɑtjɑkɑ ~ tjakatjaka]	'tired'

A mid-central allophone [ʌ] most often occurs prepause in unstressed syllables:

tjuřa	[tjʊřɑ ~ tjʊřʌ]	'leave it!'

The back rounded allophone [ɒ] occurs between *w* and a velar or a bilabial:

waŋka	[wɑŋgɑ ~ wɒŋgɑ]	'talk'
wampaḷa	[wɑmbɑ̣ḷɑ ~ wɒmbɑ̣ḷɑ]	'stranger'

The allophone [aⁱ] occurs preceding *y* and occurs rarely between a bilabial and a lamino-alveolar:

mayi	[mayi ~ maⁱyi]	'food'
patjala	[padjala ~ paⁱdjala]	'bite it!'

The allophone [aᵘ] occurs preceding *w*:

kawu	[kawu ~ kaᵘwu]	'body'

The vowel *u* has a high close allophone [u] freely fluctuating with a high open allophone [ʊ] in all environments:

yuŋunpa	[yuŋunba ~ yuŋunba]	'morning'

The allophone [o] fluctuates with [ʊ]; however, [o] is more common contiguous to velars and in a prepause position:

ḷuku	[ḷʊgʊ ~ ḷogo]	'ankle'
njaŋuṇa maḷu ŋayulu	[njɑ̨ŋn̥ṇɑ mɑ̨ḷo ŋayulo]	'I saw a kangaroo'

The range of tongue positions for long vowels is more limited than that for short vowels. In utterance-medial position the allophone of *i:* is [ɪ:]; of *a:* is [ɑ:]; and of *u:* is [u:]. In utterance-final position long vowels are lowered, thus [ɪ:] > [ɪ:ˇ]; [ɑ:] > [ɑ:ˇ]; [u:] > [ʊ: ~ o:].

pi:kuḷu	[pɪ:gu̯ḷu]	'possessing a foreskin'
pi:	[pɪ:ˇ]	'foreskin'
ŋa:nja	[ŋɑ̨:nja]	'that one (near)'
ŋa:	[ŋɑ:ˇ]	'that (near)'
yu:tjula	[yu:djula]	'say "yes"!'
yu:	[yʊ: ~ yo:]	'yes'

The phoneme sequence *ayi* is realized as a mid close front unrounded long vocoid [e:]:

wiyayitju	[wɪye:djʊ]	'just, only'
mayinjtju katjin	[me:njdju kadjin]	'you are lying to me'
wantipayi	[wandibe:]	'one habitually with the women'

This interpretation has been chosen since (1) a phoneme *e:* would introduce asymmetry into the otherwise symmetrical vowel system; (2) all other long vowels in utterance-final position are limited to one-syllable words; and (3) in certain instances when stress is shifted to the

end of an intonation contour, two syllables can be distinguished.[8] An example of (3) above is

yankupayi	[yáŋgube:]	'he was going'
yankupayi	[yaŋgubaýí]	'he was going'

Vowels optionally end in a weakly articulated glottal stop in utterance-final position.

Marsh, James. 1969. "Mantjiltjara phonology." Oceanic Linguistics 8: 131-52.